



# **SIM7020 Series\_ EAT Environment &Compilation &Burning Guide**

**LWPA Module**

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# About Document

## Version History

Version	Date	Owner	What is new
V1.00	2019.1.17	Yanan.Sun	First Release
V1.01	2019.7.24	Yanan.Sun	Add description for compiling on Linux Add support on SIM7020G Add debug method
V1.02	2020.6.10	Wenjie.Lai	All

## Scope

This document applies to the following products

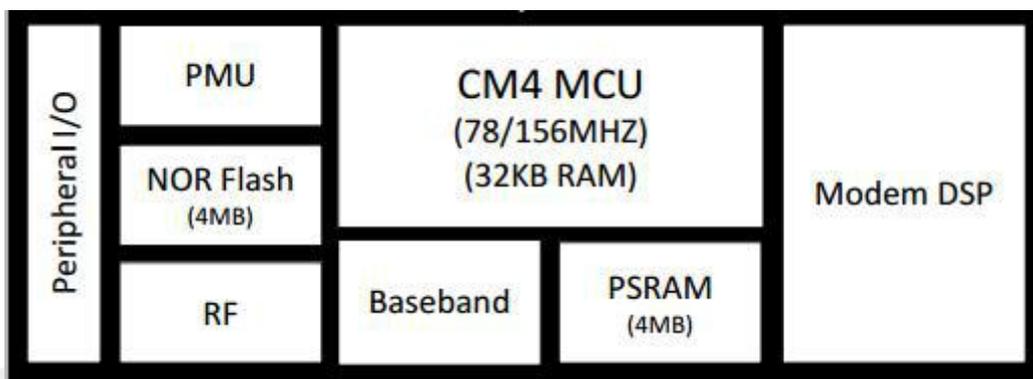
Name	Type	Size (mm)	Comments
SIM7020C	NB1	17.6*15.7	Band 1/3/5/8
SIM7020E	NB1	17.6*15.7	Band 1/3/5/8/20/28
SIM7030	NB1	16*18	Band 1/3/5/8
SIM7060	NB1+GNSS	24*24	Band 5/8
SIM7020G	NB2	17.6*15.7	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85
SIM7060G	NB2+GNSS	24*24	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85

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# 1 Introduction

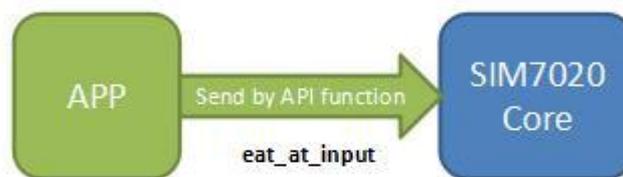
The architecture of SIM7020 is AP(Application Processor) + NB-IoT Modem, for the AP part it's based on ARM Cortex-M4 Core and is running Free RTOS. SIMCom share part of the RAM\ROM memory, provides Embedded AT development which will utilize SIM7020 resources and provide interfaces to move external MCU functions inside SIM7020, as to save cost for customers.



For modem operation, customer can use APIs to send AT commands and receive response of corresponding AT command as following.

## Embedded-AT

### Send AT Command



### Receive AT Command return value



For peripheral (GPIO\Timer\UART\IIC\SPI\EINT\PWM .etc) operation, we also provide APIs and demo codes to customer for quick start with EAT.

\* For details on SDK, please contact SIMCom technical support team ([support@simcom.com](mailto:support@simcom.com)).

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## 2 Compiling environment

SIM7020 series EAT SDK can be compiled with default GCC on Linux OS and with MinGW cross-compilation tool on Microsoft Windows OS (Suggest newer than Win7).

### 2.1 Install the SDK build environment on Linux

SIM7020 EAT SDK can be compiled on any edition of Linux OS, the default GCC compiler provided in the SDK is based on the 32-bit architecture, the following description is based on the Ubuntu 18.04 (Linux version 4.15.18).

The following command is used to download and install the basic building tools on Ubuntu.

```
sudo apt-get install build-essential
```

When using 64-bit Linux OS, there may be following compilation error occurs:

```
/bin/sh: 4: tools/gcc/gcc-arm-none-eabi/bin/arm-none-eabi-gcc: not found
```

Need to install packages to support the 32-bit executable binary with following command:

```
sudo dpkg --add-architecture i386
```

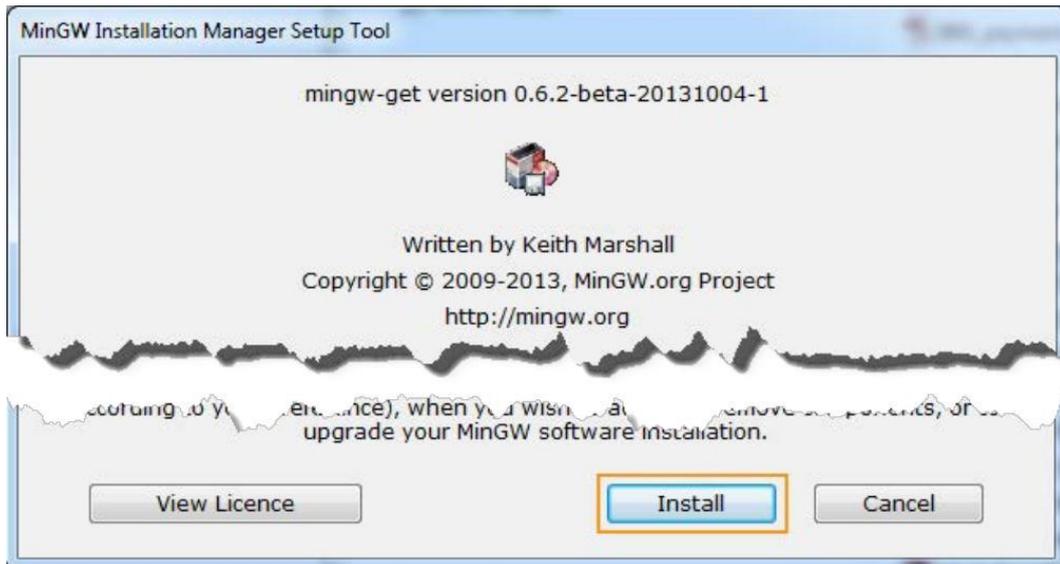
```
sudo apt-get update
```

```
sudo apt-get install libc6-i386
```

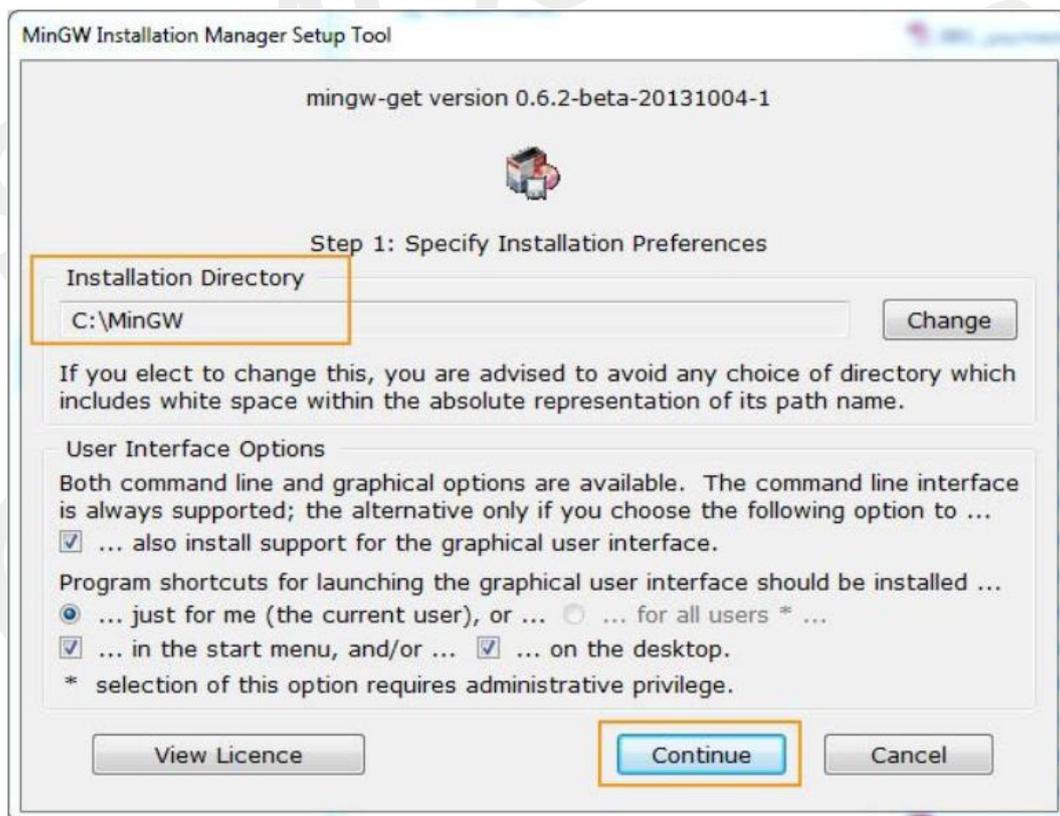
### 2.2 Install the SDK build environment on Microsoft Windows

To build the SDK on Windows OS, need to install MinGW cross-compiler, SDK has integrated ARM GCC tool chain for Windows OS.

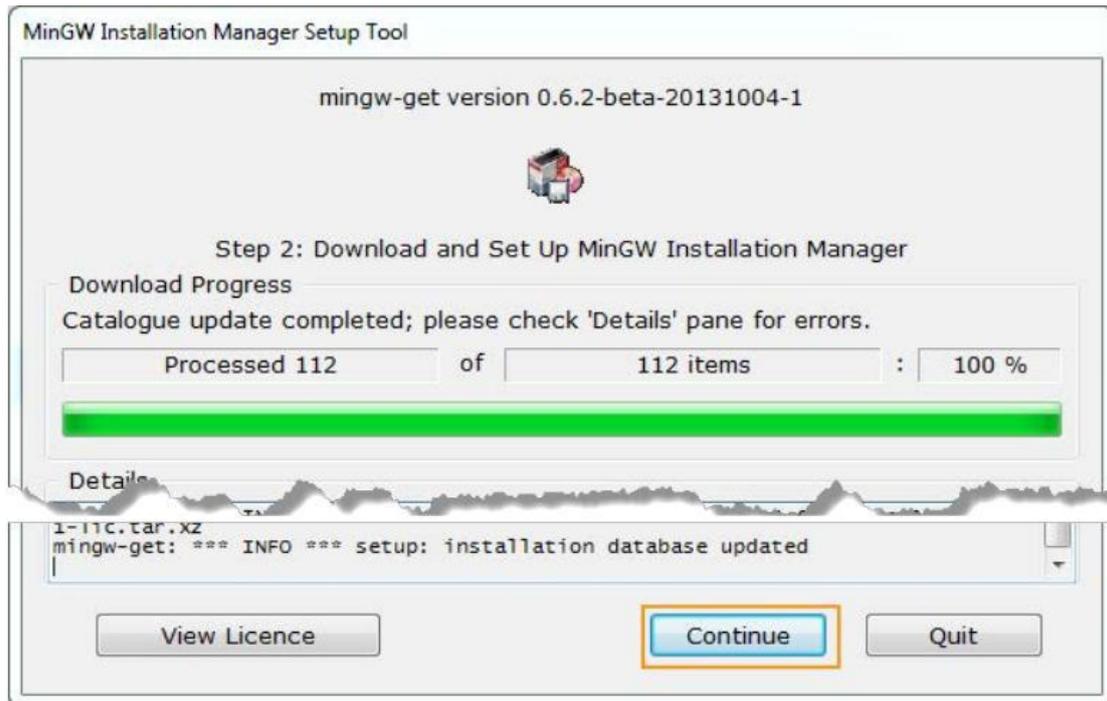
- 1) Download mingw-get-setup.exe from [here](#)
- 2) Launch the installer and click Install



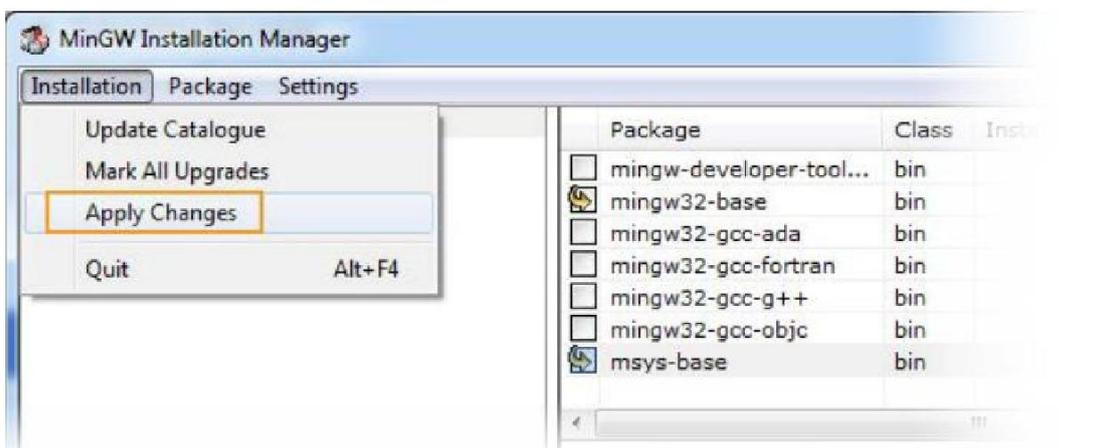
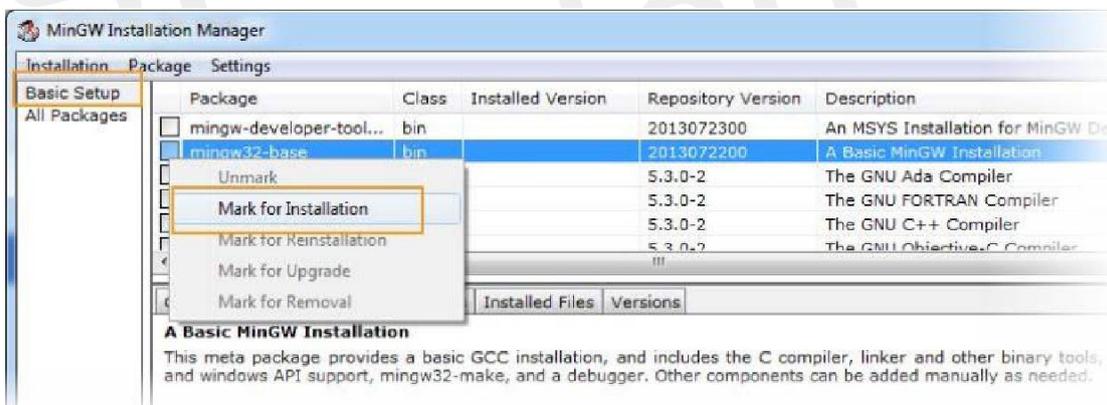
- 3) Follow the on screen instructions and keep the default setting, click Continue to download the tool to C:\MinGW



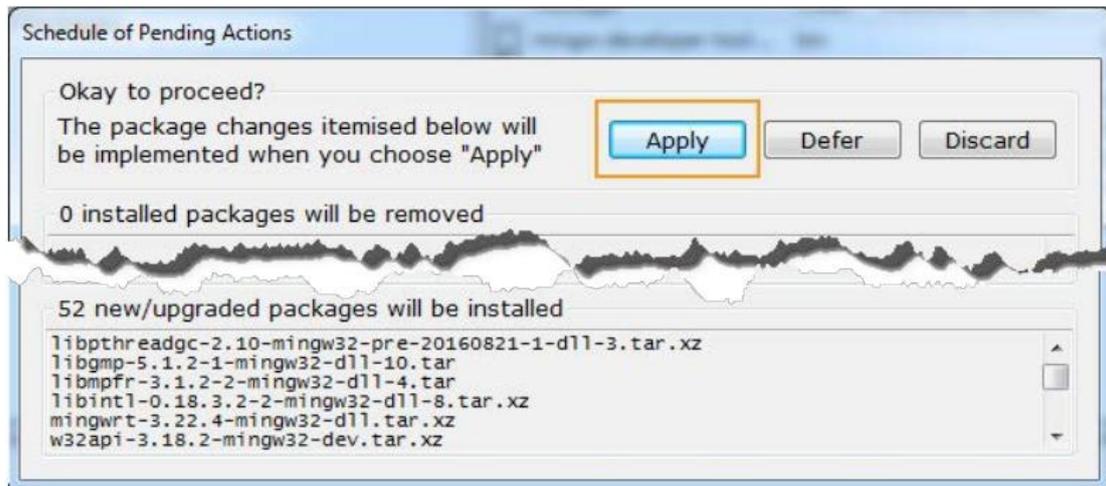
- 4) Click Continue after the download is complete



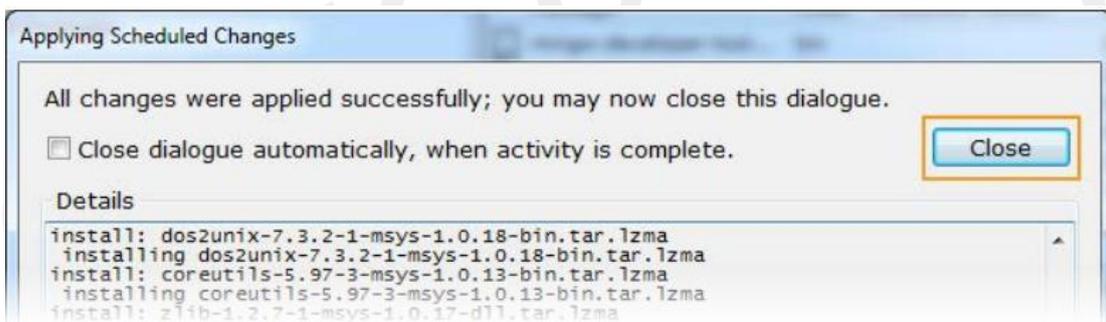
- 5) Select msys-base and mingw32-base from Basic Setup package list, and right click to bring up the menu options. Click Mark for Installation from the menu. Click Apply Changes from the Installation menu.



6) Click Apply on the pop--up dialog windows.



7) When complete click Close to close the dialog windows.



**NOTE**

- The folder name and file name in the SDK should not contain ' , ' , ' [ ' or ' ] '.
- The project name should be less than 30 characters, or build error will happen as following:

```
arm-none-eabi-gcc.exe: error:
../../../../../../../../out/mt2523_hdk/i2c_communication_with_EEPROM_dma/obj/projec
t/mt2523_hdk/hal_examples/i2c_communication_with_EEPROM_dma/src/system_mt2
523.o: No such file or directory
```

- MinGW should be installed in C:\MinGW, otherwise build error may occur.

## 3 Compile Step

### 3.1 Compile on Linux OS

- 1) cd to folder <SDK\_Root>/simcom/build/,run ./sim7020x\_SDK.sh

```

root@jack-X455LD:/home/jack/SIM7020E_EAT# cd SDK_1752B01V01SIM7020E_EAT/simcom/build/
root@jack-X455LD:/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/simcom/build# ./sim7020x_SDK.sh
UE BUILD BOARD: simcom
UE BUILD PROJECT: sim7020
platform=Linux
FEATURE = sim7020E_SDK_feature.mk
Build CM4 Firmware...
make -C project/simcom/apps/sim7020/GCC BUILD_DIR=/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/out/simcom/sim7020/obj OUTPATH=/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/out/simcom/sim7020/ -j8 FEATURE=sim7020E_SDK_feature.mk
make: 进入目录"/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/project/simcom/apps/sim7020/GCC"
/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT
/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/project/simcom/apps/sim7020/GCC

```

- 2) It will take few minutes to build the SDK, when complete you can get TOTAL BUILD: PASS on the screen, it will generate app file in folder <SDK\_Root>/out/simcom/sim7020/.

```

restore prebuilt database...
export end
Linking...
restore done.
Done
  text  data  bss  dec  hex filename
2547646 21304 2829204 5398154 525e8a /home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/out/simcom/sim7020/sim7020.elf
copy firmware.sh....
BOARD=simcom
NVDM_BASE = 0x083A5000
NVDM LENG = 0x00041000
NVDM_BACKUP_BASE = 0x083E0000
NVDM_BACKUP LENG = 0x00006000
cp /home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/project/simcom/apps/sim7020/GCC/mt2625_fpga.cmm to /home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/out/simcom/sim7020/
make: 离开目录"/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/project/simcom/apps/sim7020/GCC"
Build CM4 Firmware...Done
=====
End Build: 2019年 07月 23日 星期二 14:24:42 CST
TOTAL BUILD: PASS
Copy success...
root@jack-X455LD:/home/jack/SIM7020E_EAT/SDK_1752B01V01SIM7020E_EAT/simcom/build#

```

### 3.2 Compile on Window OS

- 1) Click msys.bat from C:\MinGW\msys\1.0, cd to folder <SDK\_Root>\simcom\build, run ./sim7020x\_SDK.sh

```

yanan.sun@MK-SUNYANAN /d
$ cd SupportedCase/SIM7020_EAT/SIM7020_EAT/simcom/build/

yanan.sun@MK-SUNYANAN /d/SupportedCase/SIM7020_EAT/SIM7020_EAT/simcom/build
$ ./sim7020C_SDK.sh
UE BUILD BOARD: simcom
UE BUILD PROJECT: sim7020
platform=MINGW32_NT-6.1
/d/SupportedCase/SIM7020_EAT/SIM7020_EAT
FEATURE = sim7020C_SDK_feature.mk
Build CM4 Firmware...
make -C project/simcom/apps/sim7020/GCC BUILD_DIR=/d/SupportedCase/SIM7020_EAT/S
IM7020_EAT/out/simcom/sim7020/obj OUTPATH=/d/SupportedCase/SIM7020_EAT/SIM7020_E
AT/out/simcom/sim7020 -j4 FEATURE=sim7020C_SDK_feature.mk
/d/SupportedCase/SIM7020_EAT/SIM7020_EAT
/d/SupportedCase/SIM7020_EAT/SIM7020_EAT/project/simcom/apps/sim7020/GCC
project/simcom/apps/sim7020

```

- 2) It will take few minutes to build the SDK, when complete you can get TOTAL BUILD: PASS on screen, it will generate app file in folder <SDK\_Root>/out/simcom/sim7020/.

```

NUDM_BASE = 0x003A5000
NUDM LENG = 0x00041000
cp /d/SupportedCase/SIM7020_EAT/SDK_SIM7020_OPENCPU_20180514/0514/MT2625/project
/simcom/apps/sim7020/GCC/mt2625_fpga.cmm to /d/SupportedCase/SIM7020_EAT/SDK_SIM
7020_OPENCPU_20180514/0514/MT2625/out/simcom/sim7020/
make: Leaving directory `/d/SupportedCase/SIM7020_EAT/SDK_SIM7020_OPENCPU_201805
14/0514/MT2625/project/simcom/apps/sim7020/GCC'
Build CM4 Firmware...Done
=====
End Build: Tue May 29 15:02:27 2018
TOTAL BUILD: PASS
Copy success...

yanan.sun@MK-SUNYANAN /d/SupportedCase/SIM7020_EAT/SDK_SIM7020_OPENCPU_20180514/
0514/MT2625/simcom/build
$

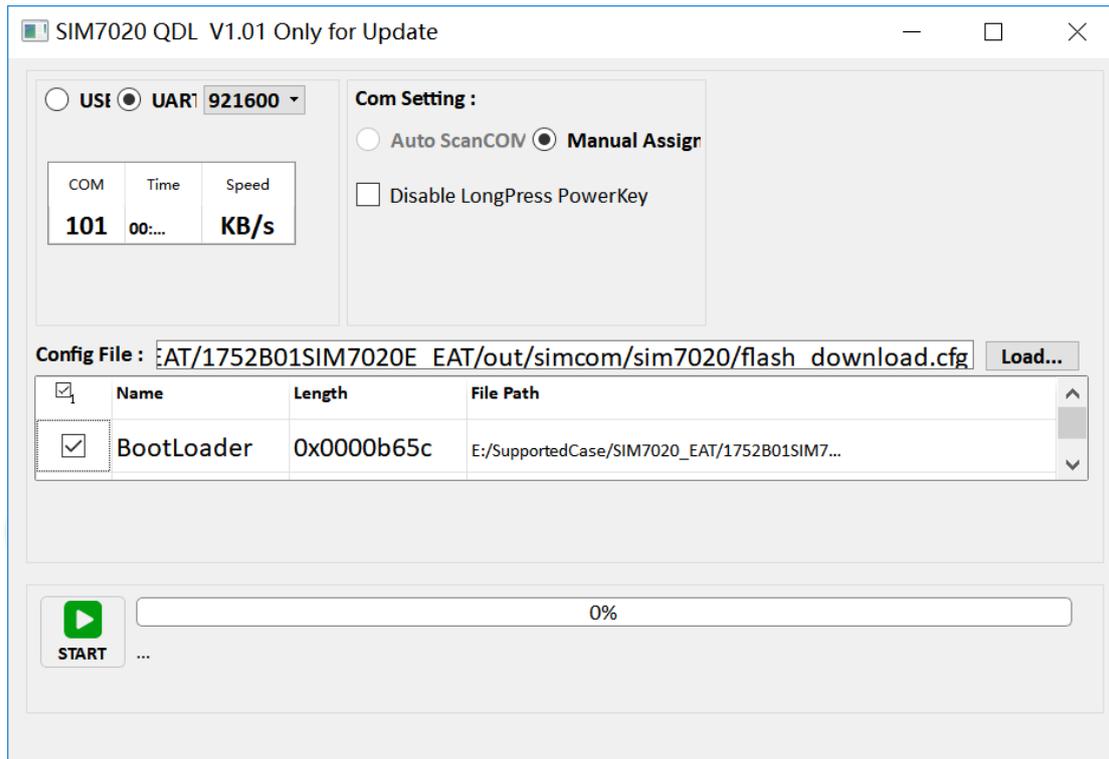
```

**NOTE**

- If get TOTAL BUILD: FAIL, please go to <SDK\_Root>/output/simcom/sim7020/log and check err.log to find the reason.

## 4 Burning

- 1) Open SIM7020 QDL V1.00 Only for Update.exe, choose <SDK\_Root>/out/simcom /sim7020/flash\_download.cfg file as Config File.



- 2) Input COM port number which corresponding to UART2 on module,choose baudrate ,click START then power on module ,when complete reboot module. After than the app you downloaded will start running.Ee

SIM7020 QDL V1.01 Only for Update

USI
  UAR1 921600

COM	Time	Speed
101	00:...	53.2 ...

Com Setting :

Auto ScanCOM
  Manual Assign

Disable LongPress PowerKey

Config File : E:\SupportedCase\SIM7020\_EAT\out\simcom\sim7020\flash\_download.cfg Load...

<input type="checkbox"/>	Name	Length	File Path
<input checked="" type="checkbox"/>	BootLoader	0x0000b65c	E:\SupportedCase\SIM7020_EAT\1752B01SIM7...

100%

Format and Download success !!

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## 5 Debug

For SIM7020 EAT, there are 2 ways for debugging:

### 1. UART interface

There are 2 UART ports on SIM7020x, customer can choose one of them to output logs, please refer to eat\_trace API in demo codes.

### 2. USB interface

With MTK Genie tool, customer can get logs which are created by printf API in app, also can get modem trace log with Genie tool, please refer to SIM7020 Series\_Genie\_Logging\_Tool\_User\_Guide\_V1.0.pdf.

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